

YELLOWSTONE RIVER COMPACT COMMISSION

408 Federal Building

Helena, Montana

December 26, 1957

His Excellency Milward L. Simpson  
Governor of the State of Wyoming  
Cheyenne, Wyoming

His Excellency J. Hugo Aronson  
Governor of the State of Montana  
Helena, Montana

His Excellency John E. Davis  
Governor of the State of North Dakota  
Bismarck, North Dakota

Sirs:

Pursuant to Article III of the Yellowstone River Compact, the Commission created according to the terms of said Compact makes the following sixth annual report.

The Sixth Annual Meeting of the Yellowstone River Compact Commission was held at Billings, Montana on November 26, 1957. The duly constituted members were in attendance.

Your Commissioners did not determine the allocable uses of the several states during the report period ending September 30, 1957. These determinations were not considered necessary under the present state of water-resources development. We are in agreement that allocable water uses were not exceeded by the upstream State or States during this period and no problems of that nature were noted or expressed. Stream flow at the designated points of measurement exceeded flows of a year ago by 15 to 30 percent.

The administrative expenses of the Commission during the fiscal year ending June 30, 1957 were \$6,000, of which \$3,000 was borne by the federal government. The remaining \$3,000 was borne by contributions of \$1,500 each by the States of Montana and Wyoming. A budget of \$6,000 for the fiscal year ending June 30, 1958 was approved. It is anticipated that budgets of a like amount, namely \$6,000 per year, will be adequate for the administrative expense of the Commission during the fiscal year ending June 30, 1959. This is contingent upon approximately the present level of data collection and administration.

The Commission has directed its activity to the collection of stream-flow data for the specified points of measurement and the assembly of information on water-right filings to actively administer the Compact when the need arises. Records of stream flow collected through the support of the Commission and data on storage in reservoirs as supplied by various governmental agencies are summarized in this report.

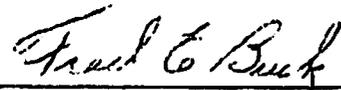
A proposed diversion of 5.03 cubic feet per second from the headwaters of the Little Popo Agie River, a tributary of the Bighorn River, to the North Platte River Basin in Wyoming for industrial use was brought to the attention of the Commission by representatives of the Columbia-Geneva Steel Division of the United States Steel Corporation. The proposal involved the partial transfer of six water rights having priority earlier than January 1, 1950. After due consideration of the matter and the provisions of the Compact, the Commission adopted the following motion: "Insofar as its authority extends, the Commission agrees that it will not oppose the diversion of 5.03 cubic feet per second of water having a priority earlier than January 1, 1950, as proposed by the Columbia-Geneva Steel Division of the United States Steel Corporation. This shall not establish any precedent." The North Dakota State Water Conservation Commission approved the diversion in this amount at its meeting of December 20, 1957.

Pertinent data and records are available in the files of the Commission maintained in the office of the U. S. Geological Survey at Helena, Montana.

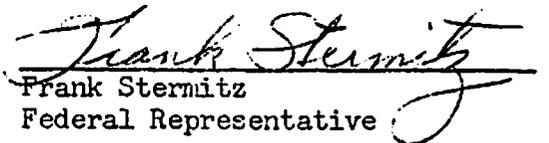
Respectfully submitted,



Paul A. Rechar  
Commissioner for Wyoming



Fred E. Buck  
Commissioner for Montana



Frank Sternitz  
Federal Representative

## GENERAL REPORT

### Cost:

The work of the Commission continues to be financed by cooperative arrangements between the State of Wyoming and Montana and the United States of America.

The expense of the Commission during the fiscal year ending June 30, 1957 is given:

	<u>Total Cost</u>	<u>Borne by United States</u>	<u>Borne by</u>	
			<u>Wyoming</u>	<u>Montana</u>
Gaging station operation and maintenance. . . . .	\$4900	\$2450	\$1225	\$1225
Collection and assembly of data and administration	<u>\$1100</u>	<u>\$ 550</u>	<u>\$ 275</u>	<u>\$ 275</u>
	\$6000	\$3000	\$1500	\$1500

The budget for the fiscal years ending June 30, 1958 and June 30, 1959 have been set at \$6000 each, on the assumption that the current level of activity will not be exceeded.

The above tabulation of incurred and contemplated cost do not include the salaries and necessary expenses of the State representatives which are borne by the respective states, nor the cost of collection of hydrologic data now being made available from other sources.

### Gaging Stations:

Records of stream-flow were collected at the designated points of measurement as described in the Compact or as near thereto as the Commission deemed practical. The recorder installation on the Bighorn River at Bighorn, Montana was placed in operation on October 7, 1956. The relocation of this station from the site 4 miles upstream was made to avoid the recurring and shifting silt deposits in the channel which were aggravated by the Manning Dam.

Supplementary data collection considered desirable by the Commission consisted of miscellaneous measurements of the Whitehorse Canal near Edgar, discharge records of the Little Bighorn River near Crow Agency and the Agency Canal at Crow Agency. These miscellaneous data and discharge records at designated points of measurement are given in Appendix B.

### Diversions:

The Commissioners for Montana and Wyoming are in full agreement that allocable uses under the Compact did not approach the pro rata share in either state during the year. Available information on new water-right filings, general knowledge of developments completed since January 1, 1950 and records of stream-flow supported that opinion.

The assembly of information on new water right filings is being carried on by the Commission in preparation for the time when allocable uses will be necessary for administration of the Compact. The major expense of quantitative determination will be spared until the need is strongly evident.

### Storage:

#### In reservoirs completed after January 1, 1950:

Boysen Reservoir on the Bighorn River is the principal reservoir in this category, records for which are tabulated in Appendix C. The remaining reservoirs completed since January 1, 1950 are, in the aggregate, relatively small. Details of their operations have not been collected.

#### In reservoirs existing on January 1, 1950:

Compact allocations are affected by storage in these reservoirs only in so far as utilized for new developments. The extent of that use is known to be minor or relatively negligible. As a matter of information the quantities in storage on month-ends in the larger reservoirs in this category, namely Bull Lake, Pilot Butte, Buffalo Bill and Tongue River Reservoirs are tabulated in Appendix D.

RULES AND REGULATIONS FOR ADMINISTRATION OF  
THE YELLOWSTONE RIVER COMPACT

A compact, known as the Yellowstone River Compact between the States of Wyoming, Montana and North Dakota, having become effective on October 30, 1951 upon approval of the Congress of the United States, which apportions the waters of certain interstate tributaries of the Yellowstone River which are available after the appropriative rights existing in the states of Wyoming and Montana on January 1, 1950 are supplied, and after appropriative rights to the use of necessary supplemental water are also supplied as specified in the Compact, the following rules and regulations are adopted subject to the provisions for amendment, revision or abrogation as provided herein.

## Article I. Collection of Water Records.

- A. It shall be the joint and equal responsibility of the members of the states of Wyoming and Montana to collect, cause to be collected or otherwise furnish records of tributary stream flow at the points of measurement specified in Article V (B) of the Compact, or as near thereto as is physically or economically feasible or justified.

## 1. Clarks Fork

The gaging station known as Clarks Fork at Edgar, Montana and which is located in SW $\frac{1}{4}$  sec. 24, T. 4 S., R. 24 E., shall temporarily be the point of measurement for the Clarks Fork, subject to whatever mutually agreeable corrections to the stream-flow records at this point as may be deemed practical to meet the terms of the Compact.

## 2. Bighorn River (exclusive of Little Bighorn River)

The gaging station known as the Bighorn River near Custer, Montana and located near the center of Sec. 10, T. 4 N., R. 34 E., shall temporarily be the designated point of measurement on that stream. The flow of the Little Bighorn River as measured at the gaging station near Hardin, Montana and located in S $\frac{1}{2}$ , SE $\frac{1}{4}$  sec. 18, T. 1 S., R. 34 E., shall be considered the point of measurement for that stream, except that if or when satisfactory records are not available, the records for the nearest upstream station with practical corrections for intervening inflow or diversion shall be used.

## 3. Tongue River

The gaging station known as the Tongue River at Miles City, Montana and located in SE $\frac{1}{4}$  sec. 23, T. 7 N., R. 47 E., shall temporarily be the point of measurement for that stream.

## 4. Powder River

The gaging station known as the Powder River near Locate, Montana and located in NE $\frac{1}{4}$  sec. 26, T. 8 N., R. 51 E., shall temporarily be the designated point of measurement for that stream.

- B. Records of total annual diversion in acre-feet above the points of measurement designated in the Compact for irrigation, municipal and industrial uses developed after January 1, 1950 shall be furnished by the members of the Commission for their respective states, at such time as the Commission deems necessary for interstate administration as provided by the terms of the Compact. Providing that if it be acceptable to the Commission, reasonable estimates thereof may be substituted.
- C. Annual records of the net change in storage in all reservoirs, not excluded under Article V (E) of the Compact, above the specified point of measurement specified in the Compact and completed after January 1, 1950, and the annual net change in reservoirs existing prior to January 1, 1950, which is used for irrigation, municipal and industrial purposes developed after January 1, 1950, shall be the primary responsibility of the member of the Commission in whose state such works are located; providing, such data is not furnished by federal agencies under the provisions of Article III (D) of the Compact, or, collected by the Commission.

## Article II. Office and Officers

- A. The office of the Commission shall be located, and be that of the United States Geological Survey in Helena, Montana.
- B. The Chairman of the Commission shall be the federal representative as provided in the Compact.
- C. The Secretary of the Commission shall be as provided for in Article III of these rules.
- D. The credentials of each member of the Commission shall be placed on file in the office of the Commission.

## Article III. Secretary

- A. The Commission, subject to the approval of the Director of the United States Geological Survey to cooperative agreements for such purpose, shall employ the U. S. Geological Survey on a yearly basis to render such engineering and clerical aid as may reasonably be necessary for the administration of the Compact. Said agreement shall provide that the Geological Survey shall:
1. Maintain and operate gaging stations at or near the points of measurement specified in Article V (A) of the Compact.
  2. Assemble factual information on stream flow, diversion and reservoir storage for the preparation of an annual report to the Governors of the signatory states.
  3. Make such investigations and reports as may be requested by the Commission in aid of its administration of the Compact.
  4. Act as secretary to the Commission.

## Article IV. Budget

- A. At the annual meeting of each even numbered year or prior thereto, the Commission shall adopt a budget for operation during the ensuing biennium beginning July first. Such budget shall set forth the total cost of construction, maintenance and operation of gaging stations, the cost of engineering and clerical aid, and other necessary expenses excepting the salaries and personal expenses of the Commissioners. On odd-numbered years revisions of the budget shall be considered.
- B. It shall be the obligation of the Commissioners of the States of Montana and Wyoming to endeavor to secure from the Legislature of their respective states sufficient funds with which to meet the obligations of this Compact, except insofar as provided by the federal government.

## Article V. Meetings

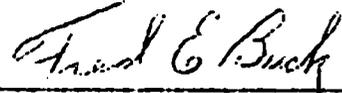
An annual meeting of the Commission shall be held on the third Tuesday of each November at some mutually agreeable point in the Yellowstone River Basin for consideration of the annual report for the water year ending the preceding September 30th, and for the transaction of such other business consistent with its authority; provided that by unanimous consent of the Commission the date and place of

the annual meeting may be changed. Other meetings as may be deemed necessary shall be held at a time and place set by mutual agreement, for the transaction of any business consistent with its authority.

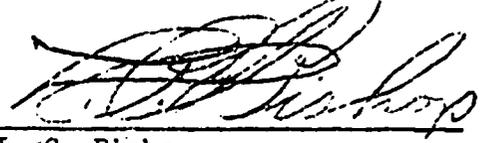
No action of the Commission shall be effective until approval by the Commissioners for the States of Wyoming and Montana.

Article VI. Amendments, Revisions and Abrogations

The Rules and Regulations of the Commission may be amended or revised by a unanimous vote at any meeting of the Commission.



Fred E. Buck  
Fred E. Buck  
Commissioner for Montana



L. C. Bishop  
L. C. Bishop  
Commissioner for Wyoming

Adopted November 17, 1953

Attested:

  
Frank Stermitz  
Frank Stermitz  
Federal Representative

## MONTHLY SUMMARY OF DISCHARGE

## Clarks Fork at Edgar, Montana

Location.--Lat  $45^{\circ}28'$ , long  $108^{\circ}51'$ , in SW $\frac{1}{4}$  sec. 24, T. 4 S., R. 23 E., on right bank just downstream from highway bridge, half a mile east of Edgar and 6 miles upstream from Rock Creek.

Records available.--July 1921 to September 1957.

Gage.--Water-stage recorder. Prior to Sept. 18, 1940, chain gage and Sept. 18, 1940, to Aug. 31, 1953, wire-weight gage, at same site and datum.

Average discharge.--24 years (1930-31, 1934-57), 1,039 cfs (752,200 acre-ft per year).

Extremes.--Maximum discharge during year, 9,830 cfs June 5 (gage height, 8.33 ft); minimum daily, 210 cfs Dec. 5.

1921-57: Maximum discharge observed, 10,900 cfs June 2, 1936 (gage height, 8.62 ft); minimum observed, 41 cfs July 25, 1931.

Remarks.--The following discharge measurements were made of the White-horse Canal near point of diversion about 3 miles downstream in SW $\frac{1}{4}$  sec. 1, T. 4 S., R. 23 E: July 25, 1957, 38.8 cfs; Aug. 15, 1957, 16.7 cfs; Sept. 20, 1957, no flow. On basis of discharge measurements and an irrigator's statement of canal operation, the seasonal diversion is estimated at about 7500 acre-feet.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1956	10,933	419	318	353	21,690
November	15,878	590	403	529	31,490
December	12,716	494	210	410	25,220
January 1957	10,640	370	320	343	21,100
February	13,610	850	350	486	27,000
March	12,674	760	327	409	25,140
April	12,484	898	345	416	24,760
May	77,974	5,220	625	2,515	154,700
June	176,720	9,300	3,440	5,891	350,500
July	88,580	6,350	1,090	2,857	175,700
August	20,090	1,100	419	648	39,850
September 1957	<u>19,703</u>	<u>868</u>	<u>525</u>	<u>657</u>	<u>39,080</u>
Water year 1956-57	472,002	9,300	210	1,293	936,200

## MONTHLY SUMMARY OF DISCHARGE

## Little Bighorn River near Crow Agency, Montana

Location.--Lat  $45^{\circ}34'$ , long  $107^{\circ}27'$ , in  $E\frac{1}{2}SE\frac{1}{4}$  sec. 13, T. 3 S., R. 34 E., on right bank at Chicago, Burlington & Quincy Railroad bridge, 2 miles south of Crow Agency and 14 miles upstream from mouth.

Drainage area.--1,190 sq mi, approximately.

Records available.--April 1912 to September 1924, August 1928 to December 1932, April 1938 to September 1957 (few winter records in earlier years). March 1905 to June 1906 at site at Crow Agency, 2 miles downstream, records not equivalent because Crow Agency ditch diverts water between the two sites. October 1915 to September 1940, published as Little Horn River near Crow Agency.

Gage.--Water-stage recorder. April 11, 1912 to Sept. 30, 1918, staff or chain gage; Oct. 1, 1918, to Sept. 30, 1924, Aug. 26, 1928, to Sept. 30, 1930, water-stage recorder; Oct. 1, 1931, to Dec. 5, 1932, Apr. 1, 1938 to May 6, 1947, wire-weight or chain gage; all at same site and datum.

Average discharge.--21 years (1928-29, 1931-32, 1938-57). 262 cfs (189,700 acre-feet per year)

Extremes.--Maximum discharge during year, 2,750 cfs June 19 (gage height 9.84 ft); maximum gage height, 10.69 ft Feb. 27 (ice jam); minimum discharge, 39 cfs Oct. 2 (gage height, 3.97 ft).

1912-24, 1928-32, 1938-57: Maximum discharge observed, about 8,200 cfs July 23, 1923 (gage height, 14.0 ft); no flow July 28 to Aug. 6, 1921.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1956	2,141	122	39	69.1	4,250
November	3,980	170	115	133	7,890
December	3,292	135	75	106	6,530
January 1957	2,618	95	60	84.5	5,190
February	6,233	1,500	85	223	12,360
March	5,997	605	140	193	11,890
April	8,183	1,470	131	273	16,230
May	14,789	945	201	477	29,330
June	40,915	2,660	565	1,364	81,150
July	13,047	1,090	87	421	25,880
August	4,049	242	110	142	8,750
September 1957	<u>5,220</u>	226	114	174	<u>10,350</u>
Water year 1955-57	110,824	2,660	39	304	219,800

## MONTHLY SUMMARY OF DISCHARGE

## Agency Canal at Crow Agency, Montana

Location.--Lat 45°35'55", long 107°27'15", near center of sec. 1, T. 3 S., R. 34 E., on downstream right abutment of bridge at intersection of U. S. Highway No. 87 and the main street of Crow Agency, a third of a mile downstream from headgate.

Records available.--Fragmentary records for 1953-57.

Gage.--Staff gage read twice daily during canal operation. Some recorder record during 1953.

Extremes.--Maximum daily discharge during year, 96 cfs July 18; no flow Oct. 29 to May 10.

Remarks.--Canal operated Oct. 1-28 and May 11 to Sept. 30 for irrigation of about 3,500 acres of land. Records fair due to operation of check gates downstream from gage.

<u>Month</u>	<u>Second foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1956	459.5	26	0	14.8	911
May	471	42	0	15.2	934
June	912	35	21	30.4	1,810
July	1,860	96	29	60.0	3,677
August	2,072	79	59	66.8	4,110
September 1957	<u>1,167</u>	62	19	38.9	<u>2,310</u>
Water Year 1956-57	6,941.5	96	0	19.0	13,760

## MONTHLY SUMMARY OF DISCHARGE

## Little Bighorn River near Hardin, Montana

Location.--Lat  $45^{\circ}44'$ , long  $107^{\circ}34'$ , on line between SE $\frac{1}{4}$  sec. 18 and NE $\frac{1}{4}$  sec. 19, T. 1 S., R. 34 E., on right bank 425 ft upstream from county road bridge, about a quarter of a mile upstream from mouth, and 2.4 miles east of Hardin.

Records available.--June 1953 to September 1957.

Gage.--Water-stage recorder. Prior to Oct. 17, 1953, wire-weight gage on bridge 425 ft downstream at different datum.

Extremes.--Maximum discharge during year, 2,990 cfs June 19 (gage height 8.00 ft); maximum gage height, 9.56 ft Feb. 26 (backwater from ice); minimum discharge, 22 cfs Oct. 4.

1953-57: Maximum discharge, that of June 19, 1957; maximum gage height, 11.16 ft Mar. 20, 1956 (backwater from ice); minimum discharge, 4.2 cfs Aug. 10, 1956.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1956	2,097	120	26	67.6	4,160
November	3,862	163	100	129	7,660
December	3,209	130	55	104	6,360
January 1957	2,788	105	65	89.9	5,530
February	7,454	1,900	94	266	14,780
March	6,592	823	141	213	13,080
April	8,460	1,560	141	282	16,780
May	13,942	950	213	450	27,650
June	42,653	2,700	658	1,422	84,600
July	12,943	1,110	110	418	25,670
August	3,642	255	64	117	7,220
September 1957	<u>5,361</u>	248	115	179	<u>10,630</u>
Water year 1955-57	113,003	2,700	26	310	224,100

## MONTHLY SUMMARY OF DISCHARGE

## Bighorn River at Bighorn, Montana

Location.--Lat  $46^{\circ}08'50''$ , long  $107^{\circ}27'20''$ , in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 33, T. 5 N., R. 34 E., on right bank just downstream from bridge on U. S. Highway 10, three-quarters of a mile upstream from mouth, 1 mile southwest of Bighorn, and 4 miles east of Custer.

Records available.--May 1945 to September 1957. Published as "near Custer" 1945-55.

Gage.--Water-stage recorder. Prior to Oct. 7, 1955, water-stage recorder at site 4 miles upstream at different datum (May 11 to Dec. 6, 1945, wire-weight gage at same datum).

Average discharge.--12 years, 3,859 cfs (2,794,000 acre-ft per year).

Extremes.--Maximum discharge during year, 20,800 cfs July 3; maximum gage height, 8.95 ft June 18 (backwater from Yellowstone River); minimum daily discharge, 1,400 cfs Jan. 29.

1945-57: Maximum discharge, 26,200 cfs June 24, 1947 (gage height 8.79 ft, site and datum then in use), from rating curve extended above 12,500 cfs by logarithmic plotting; maximum gage height recorded, 10.65 ft, Mar. 20, 1947 (ice jam), site and datum then in use; minimum discharge, 756 cfs Dec. 13, 1949.

<u>Month</u>	<u>Second foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1956	104,000	4,490	2,460	3,355	206,300
November	121,840	4,440	3,400	4,061	241,700
December	92,400	3,900	1,800	2,981	183,300
January 1957	71,300	3,200	1,400	2,300	141,400
February	73,400	3,400	1,900	2,621	145,600
March	85,670	3,620	1,800	2,764	169,900
April	88,030	10,260	2,070	2,934	174,600
May	165,060	9,340	1,860	5,325	327,400
June	412,530	18,500	8,710	13,750	818,200
July	348,760	20,300	4,830	11,250	691,800
August	80,900	4,490	2,000	2,610	160,500
September 1957	<u>88,870</u>	3,680	2,160	2,962	<u>176,300</u>
Water year 1956-57	1,732,760	20,300	1,400	4,747	3,437,000

## MONTHLY SUMMARY OF DISCHARGE

## Tongue River at Miles City, Montana

Location.--Lat  $46^{\circ}21'$ , long  $105^{\circ}48'$ , in SE $\frac{1}{4}$  sec. 23, T. 7 N., R. 47 E., on right bank 4 miles south of Miles City and 8 miles upstream from mouth.

Records available.--April 1938 to April 1942, April 1946 to September 1957. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to September 1932.

Gage.--Water-stage recorder. April 1938 to April 1942, wire-weight gage at site 8 miles upstream at different datum.

Average discharge.--13 years (1938-39, 1940-41, 1946-57). 390 cfs (282,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,980 cfs Apr. 24, (gage height, 6.31 ft); maximum gage height, 6.33 ft Mar. 1 (backwater from ice); minimum discharge, 28 cfs Oct. 20.

1938-42, 1946-57: Maximum discharge, 12,000 cfs Mar. 6, 1949 (gage height, 10.6 ft), float measurement; maximum gage height, 11.80 ft Mar. 6, 1949 (ice jam); no flow July 9-19, Aug. 13, 14, Sept. 28, 1940.

<u>Month</u>	<u>Second foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1956	2,391	187	29	77.1	4,740
November	8,821	403	210	294	17,500
December	6,935	250	180	224	13,760
January 1957	4,090	210	80	132	8,110
February	3,935	500	100	141	7,800
March	7,446	1,000	90	240	14,770
April	11,051	3,600	174	368	21,920
May	15,030	1,000	211	485	29,810
June	60,935	3,710	300	2,031	120,900
July	17,959	1,800	99	579	35,620
August	3,256	218	69	105	6,460
September 1957	<u>8,839</u>	468	151	295	<u>17,530</u>
Water year 1956-57	150,688	3,710	29	413	298,900

## MONTHLY SUMMARY OF DISCHARGE

## Powder River near Locate, Montana

Location.--Lat  $46^{\circ}26'$ , long  $105^{\circ}18'$ , in NE $\frac{1}{4}$  sec. 26, T. 8 N., R. 51 E., on right bank 50 ft downstream from bridge on U. S. Highway 12 at present site of Locate (5 miles west of former site of Locate), 3 miles upstream from Locate Creek, and 25 miles east of Miles City.

Records available.--March 1938 to September 1957.

Gage.--Water-stage recorder and wire-weight gage. Prior to July 11, 1947, wire-weight gage at bridge 50 ft upstream at same datum.

Average discharge.--19 years, 626 cfs (453,200 acre-ft per year).

Extremes.--Maximum discharge during year, 4,380 cfs June 22 (gage height, 5.17 ft); minimum daily, 5.5 cfs Oct. 14.

1938-57: Maximum discharge observed, 31,000 cfs Feb. 19, 1943 (gage height, 11.23 ft), from rating curve extended above 14,000 cfs; no flow Jan. 16 to Feb. 12, Feb. 22-24, 1950.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1956	240.5	17	5.5	7.76	477
November	1,963	140	14	65.4	3,890
December	3,568	140	85	115	7,080
January 1957	2,635	130	30	85.0	5,230
February	2,410	300	30	86.1	4,780
March	12,979	738	292	419	25,740
April	10,492	1,160	234	350	20,810
May	13,634	1,160	157	440	27,040
June	71,237	4,250	657	2,375	141,300
July	19,273	1,900	150	622	38,230
August	2,420.4	443	6	78.1	4,800
September 1957	<u>2,865</u>	270	34	95.5	<u>5,680</u>
Water year 1956-57	143,716.9	4,250	5.5	394	285,100

## RESERVOIRS COMPLETED AFTER JANUARY 1, 1950

## BOYSEN RESERVOIR

Water-stage recorder at dam on Bighorn River, about 21 miles south of Thermopolis, Wyoming. Reservoir formed by earth-fill dam, construction of which began in 1947. Storage began on October 11, 1951. Dead storage, 62,000 acre-feet at elevation 4657.0. Usable contents, 758,000 acre-feet at elevation 4725.0 (top of gates). Crest of dam at elevation 4758.

Records given herein represent usable contents. Water is used for irrigation and power development. Allocation for flood control provided. Data collected by U. S. Bureau of Reclamation and furnished by Corps of Engineers, U. S. Army.

Extremes.--Maximum usable contents during year, 857,400 acre-feet July 5; minimum, 390,600 acre-feet March 30, April 2.

1953-55: Maximum usable contents, that of July 5, 1957; minimum, 189,800 acre-feet March 18, 19, 1956.

<u>Month</u>	<u>Water-Surface elevation in feet</u>	<u>*Contents in Acre-feet</u>	<u>Change in contents during month in acre-feet</u>
September 30, 1956	4,719.61	656,700	
October 31	4,715.73	589,500	-- 67,200
November 30	4,711.60	522,800	- 66,700
December 31	4,708.12	469,800	- 53,000
January 31, 1957	4,705.98	438,600	- 31,200
February 28	4,704.53	418,000	- 20,600
March 31	4,702.56	391,100	- 26,900
April 30	4,703.21	399,900	+ 8,800
May 31	4,709.03	483,400	+ 83,500
June 30	4,727.89	816,100	+ 332,700
July 31	4,725.73	772,200	- 43,900
August 31	4,724.14	741,000	- 31,200
September 30, 1957	4,723.27	724,300	- 16,700
Water year 1956-57			+ 67,600

\* Does not include dead storage of 62,000 acre-feet

## RESERVOIRS IN EXISTENCE ON JANUARY 1, 1950

The extent, if any, of the use of reservoirs in this category which may be subject to Compact allocations was not determined. As a matter of hydrologic interest, the month-end contents in acre-feet of four reservoirs are given. The first three reservoirs are in the Bighorn River Basin in Wyoming and data on contents were furnished by the U. S. Bureau of Reclamation. Tongue River Reservoir in Montana is operated under the supervision of the Montana State Water Conservation Board which agency furnished operating data.

## Contents in Acre-feet

	<u>Bull Lake</u>	<u>Pilot Butte Reservoir</u>	<u>Buffalo Bill Reservoir</u>	<u>Tongue River a/ Reservoir</u>
September 30, 1956	102,400	8,300	338,800	20,900
October 31	92,300	3,400	289,700	15,600
November 30	90,200	4,600	261,100	9,500
December 31	84,900	9,100	232,500	8,900
January 31, 1957	76,000	9,200	203,400	8,600
February 28	67,300	14,300	187,700	b/ 10,800
March 31	63,300	21,800	176,000	14,600
April 30	60,200	27,700	157,100	b/ 16,000
May 31	76,900	27,700	283,400	b/ 31,700
June 30	149,700	26,400	468,500	b/ 42,400
July 31	150,000	13,800	439,200	c/ 33,900
August 31	137,100	11,000	381,800	25,200
September 30, 1957	127,500	7,700	359,200	8,300

a/ Contents based upon sedimentation surveys of October, 1948

b/ Content on first day of following month.

c/ Interpolated on basis of weekly readings.